

ABSTRACT OF THE DISCLOSURE**COMMUNICATION RECEIVER WITH SIGNAL PROCESSING FOR BEAM  
FORMING AND ANTENNA DIVERSITY**Inventors:

5

Hillel Hendler

The present invention provides a technique to reduce the number of RF components by using digital signal processing functions in wireless receivers having two or more antennas, which results in the reduction of system cost. The reduction occurs by using a multiplexer or switch to sample the signal received by each of the antennas. The sampling rate of the multiplexer or switch is greater than the Nyquist required sampling rate ( $F_s$ ) of the received signal bandwidth. The sampled signal is a multiplexed single analog (RF) signal, which only requires one chain of receiver components. A signal processor then is able to demultiplex the received signal at a lower frequency and can perform several functions including antenna diversity and beam forming utilizing digital signals at IF or baseband frequencies.